

Evaluation of Skylab Imagery as an Information Service for Investigating Land Use and Natural Resources (Skylab), NASA Contract NAS 9-13364

This report covers the period of February 1-28, 1974. During this period work has been conducted on determining photo processing techniques necessary to prepare the Skylab imagery for interpretation. It was decided to enlarge the imagery to a working scale of 1:250,000 to minimize the amount of photo enlarging required. At the same time, such a scale will permit us to survey reasonably large areas conveniently with direct comparison to standard map scales. Color diazo composites made from these transparencies can be further enlarged using the overhead projector and a back lighted screen from which data can be taken off. At this point it appears that the photo enlarging and processing may be accomplished in one step, rather than the two step process used for enlarging ERTS imagery.

Either of the two infrared bands, when enlarged and compared with the two visible bands, have significant grain. This grain is a significantly degrading factor when combining the different spectral bands.

Film quality of the data received from Skylab III was generally very good with the following exceptions:

S190-A. Rolls 37-43. Frames 36-40 are approximately 2 steps underexposed. The color and color infrared film is virtually useless for these areas and the monochromatic bands may be difficult to balance for enlargement and diazo reproduction.

S190-B. Roll 85. The ephemeris data gives incorrect film type-ephemeris/says SO-242 is color. The film is actually black and white. The ground location of the photographs as given in the ephemeris is also in error.

S190-B. Roll 87. The ephemeris indicates the film is SO-242. The film is actually color infrared.

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Work has continued on development of a mathematical model for predicting the color composite combinations that will provide the greatest color contrast for any group of image densities. Seven or eight colors of diazo materials from three companies were tested on a spectrophotometer. GAF materials were selected for future use since they generally had the truest colors and best purity. A computer program was developed to determine the identification of color coordinates of each diazo color according to the CIE color notation system. The cyan, magenta and yellow colors were chosen for use in composites. A series of forty color intensity steps were produced for each color, depending on film density and exposure time. The CIE values for each of these are being computed. A computer program will be developed to select composites based on a matrix of possible colors computed from these CIE values using the subtractive color process.

Some preliminary interpretations of geological features and generalized land uses have been done from the original scale imagery. Interpretation of the Long Island area indicates that forests remain along the Ronkonkoma and Harbor Hill moraines. Agriculture and residential areas occur on the glacial outwash plains. It should be possible to distinguish active and inactive agriculture as well as several crop and forest types.

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